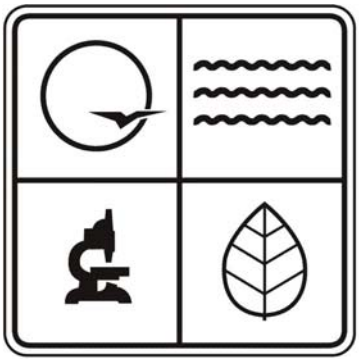

Missouri Department of Natural Resources

QUALITY MANAGEMENT PLAN

FOR

MISSOURI DEPARTMENT OF NATURAL RESOURCES

AIR AND LAND PROTECTION DIVISION,

GEOLOGICAL SURVEY AND RESOURCE ASSESSMENT DIVISION

AND

WATER PROTECTION AND SOIL CONSERVATION DIVISION

Concurrences

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Title: Director, Missouri Department of Natural Resources

Signature: _____ Date: _____

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Title: Director, Air and Land Protection Division

Signature: _____ Date: _____

Name: Mimi Garstang

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Title: Quality Assurance Manager

Signature: _____ Date: _____

Approval for EPA

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Name: Jim Gulliford

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QUALITY MANAGEMENT PLAN

Document Title: Quality Management Plan, Missouri Department of Natural Resources, Air and Land Protection Division, Geological Survey and Resource Assessment Division and Water Protection and Soil Conservation Division

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Plan Coverage: The Missouri Department of Natural Resources, Air and Land Protection Division, Geological Survey and Resource Assessment Division and Water Protection and Soil Conservation Division receive consolidated grant funds and enter into cooperative agreements with the United States Environmental Protection Agency (EPA) to operate, at the state level, programs under the following federal laws: The Clean Water Act, The Clean Air Act, The Safe Drinking Water Act, The Resource Conservation and Recovery Act, The Comprehensive Environmental Response, Compensation, and Liability Act, and The Toxic Substance Control Act. All of these program elements are covered under this Quality Management Plan and it is the intent of the Divisions to apply EPA Quality Assurance/Quality Control (QA/QC) guidance to all programmatic activities on a routine basis including those activities not supported by federal funds.

This Quality Management Plan has been prepared in accordance with *EPA Requirements for Quality Management Plans* (EPA QA/R-2).

1. MANAGEMENT AND ORGANIZATION

1.1 Introduction

Quality Assurance (QA) is one of the United States Environmental Protection Agency's (EPA's) highest priorities in the area of environmental data. In accordance with 40 CFR 31.45, 40 CFR 35.6055 or 35.6105 whichever is applicable, and EPA Order 5360.1, if a project involves environmentally related measurements or data generation, quality assurance practices consisting of policies, procedures, specifications, standards, and documentation which will produce data of quality adequate to meet project objectives must be developed and implemented.

All environmental data generated, processed and used by the Department in this Quality Management Plan include:

- Air
- Drinking Water
- Water Quality
- Water Resources
- Geology
- Solid and Hazardous Wastes
- Toxic Substances
- Radiation

This document is the Quality Management Plan (QMP) for Missouri. The Missouri Department of Natural Resources, Air and Land Protection Division, Geological Survey and Resource Assessment Division and Water Protection and Soil Conservation Division (MDNR-ALPD/GSRAD/WPSCD) are implementing the Quality System on a state-wide basis and will ensure that the Quality System will have sufficient resources and authority to support the national EPA effort. The QMP is a formal document describing the management policies, objectives, principles, organizational authority, responsibilities, accountability, and implementation plan for ensuring quality in its environmental data. It covers all intramural and extramural monitoring and measurement activities that generate and process environmental data for use by the MDNR-ALPD/GSRAD/WPSCD.

1.2 Quality Assurance Goal and Policy

1.2.1 Goal

The goal of the department's Quality System is to ensure that all environmental data used by the department is scientifically valid, defensible, and of known and documented quality. This goal can be achieved by ensuring that adequate quality assurance steps and procedures are used throughout the entire monitoring process (from initial study planning through data usage).

1.2.2 Policy

It is the policy of the ALPD, GSRAD and WPSCD that:

(a) All environmental data generated for the EPA will be of known quality and will meet the needs of each ALPD, GSRAD or WPSCD program's intended uses of the data. The data quality information developed with all environmental data will be documented and will be available to EPA, other data users and the public.

(b) Prior to data collection efforts, the intended use(s) of the data (and associated level of needed data quality) will be defined before the data collection effort begins, when feasible, and will take into account the needs of secondary data users, as appropriate. The intended data uses, level of quality, project specific quality control (QC) activities, and data acceptance criteria to meet the data quality objectives (DQO) of these uses will be defined in a Quality Assurance Project Plan (QAPP).

(c) Acceptable and cost-effective QC activities will be developed and implemented at the onset of each data collection effort to help ensure that the necessary level of data quality is achieved.

(d) Each ALPD, GSRAD or WPSCD program which generates environmental data will develop a Quality Assurance Project Plan (QAPP) following the current version of *EPA Requirements for Quality Assurance Project Plans* (EPA QA/R-5) and will ensure that adequate resources (both monetary and staff) are provided to support the QA effort, and will be responsible for implementation of the QAPP. It will be the responsibility of the ALPD, GSRAD or WPSCD program to ensure that QAPPs or other appropriate quality management tools are developed by any subgrantees, contractors, or, in some cases, the regulated community, who generate environmental data. For examples, sites undergoing corrective action under RCRA are typically required to have QAPPs, as are facilities that do ambient air monitoring as part of a New Source Review or an enforcement action, while monitoring

requirements in wastewater treatment permits reference methods found in rules. These QAPPs will be reviewed and approved by the program QC Coordinator, the Project Manager, and the program director.

The QAPP will specify the mechanism by which timely corrective action can be taken when data quality becomes degraded. The plan will also specify the detailed procedures to be followed to assure quality data.

(e) Each ALPD, GSRAD or WPSCD program which generates environmental data will designate a person who is responsible for coordinating QA activities within the program. This QA Coordinator (QAC) will provide assistance to Project Managers on quality aspects as needed. Each regional office may designate a staff member to act as a QAC for the purpose of coordinating data generation within the regional office.

1.3 Organizational Chart and Functional Statements

Organizational charts which identify all components of the Air and Land Protection Division, Geological Survey and Resource Assessment Division and Water Protection and Soil Conservation Division are included in Appendix A. The Quality Assurance (QA) Manager is independent from the divisions' programs and reports directly to the divisions' directors.

The functions of the programs and regional offices are:

Air Pollution Control Program - responsible for all air quality issues related to acid rain, air quality standards, asbestos removal, construction and operating permits, emissions inventory, emissions testing, gasoline vapor recovery, incineration, non-attainment areas, open burning permits, pollutant modeling, stack testing, toxic air emissions, and other air related issues.

Environmental Services Program - includes the state environmental laboratory and field staff assigned to environmental emergency response, air monitoring, air quality assurance, water monitoring, landfill gas and groundwater monitoring, and hazardous waste site sampling.

Geological Survey Program - acquires and maintains basic geologic data and provides technical assistance to the public. The program conducts field investigations, conducts geologic mapping, assesses environmental hazards posed by waste disposal practices and spills and regulates all well drilling activities in the state, including water wells, monitoring wells, heat pump wells, oil & gas wells and mineral exploration test holes.

Hazardous Waste Program - responsible for the treatment, storage, disposal and transportation of wastes that are classified as hazardous, petroleum above ground and underground storage tanks, registry of abandoned and uncontrolled sites, state and federal superfund sites, voluntary cleanup of hazardous substances, brownfields, and other hazardous substance related issues.

Public Drinking Water Program - responsibilities include backflow prevention, boil orders, construction permits, cross connections, drinking water standards, lead contamination, public water supplies (census), public water supply testing, wellhead vulnerability assessments, and other drinking water related issues.

Solid Waste Management Program - responsibilities include the permitting and regulation of landfills and other facilities, enforcement of solid waste violations at permitted facilities and illegal dumps, addressing dumping issues, groundwater and gas monitoring, solid waste management planning, financial assistance, promoting recycling, waste reduction, and market development, and other solid waste related issues.

Water Pollution Control Program - responsibilities include animal wastes, compliance review, land application, National Pollutant Discharge Permits (NPDES), wastewater pretreatment, non-point pollution sources, stormwater permits, water quality standards, wellhead protection, and other water-related issues.

Water Resources Program - responsibilities include administer the development, conservation and utilization of the state's water resources. The Program's primary role is to provide technical advice and assistance on water use, planning, groundwater and surface water hydrology. Issues involve interstate water availability and usage, public water well locations, water quality and quantity determinations, drought and flood response and planning, coordination and resolution of river basin issues, major water users data collection, groundwater and surface water contamination potential and prevention, and water use decisions.

Regional Offices - These include the Kansas City Regional Office, Northeast Regional Office, Southeast Regional Office, St. Louis Regional Office, and Southwest Regional Office. The regional offices provide field inspections, complaint investigations, first line troubleshooting on environmental issues for air pollution, drinking water, hazardous waste, solid waste, technical assistance, water pollution, and emergency response. Regional offices supervise activities in a number of satellite offices that do similar work with shorter travel times. A map of the regional offices is included as Appendix B.

1.4 Responsibilities of the QA Manager

The QA Manager is responsible for the divisions' overall QA System. The QA Manager reports directly to the ALPD, GSRAD and WPSCD Directors on all matters pertaining to quality assurance.

The QA Manager has the following responsibilities:

- Overall quality assurance operations of the divisions;
- In cooperation with other line managers, develops and ensures that the Quality Management Plan is current and revisions are made as necessary;
- Reviews and approves all internal Quality Assurance Project Plans;
- (describe assurances on external QAPPs); and
- Prepares program QA status reports to EPA based on requests by EPA.

1.5 Responsibilities of the QAPP Coordinator

The QAPP Coordinator is responsible for coordinating the planning, development, and implementation of QAPPs. The QAPP Coordinator reports directly to the Environmental Services Program Director, and may also receive assignments from the QA Manager on matters pertaining to quality assurance.

The QAPP Coordinator has the following responsibilities:

- Coordinate the planning, development, and implementation of QAPPs;
- Collecting, analyzing and evaluating technical information on the quality assurance requirements needed for particular projects and planning for data collection methods to meet those requirements;
- Prepare and disseminate data used to track the ESP's progress in meeting work plan commitments;
- Provide technical guidance or training to client programs for preparation of work plans; and
- consult with the planning staff in client programs to prepare recommendations on quality assurance issues.

1.6 Responsibilities of Quality Assurance Coordinator

Each program within the ALPD, GSRAD and WPSCD which generates environmental data will have at least one designated Quality Assurance Coordinator (QAC). The QAC is the main point of contact for all quality assurance issues within each program. If multiple QACs are designated within a program, each will be assigned an area of responsibility within the program. The QAC is responsible for:

- Coordination of all QA activities within their respective program;
- Assist Project Officers in the development and implementation of Data Quality Objectives where used;
- Assist Project Managers in the development of external QAPPs;
- Approve external QAPPs except those for which the QAC is the project officer; and
- Keeping the QA Manager informed of QA needs, problems, and overall status.

Each regional office may designate a staff member to act as a QA contact for the purpose of coordinating data generation or sampling equipment management within the regional office. In certain circumstances, the regional offices may acquire responsibilities for project management that would require the designation of QA project officers, a QA Coordinator or other related staff roles.

1.7 **Responsibilities of the Quality Assurance Project Officer**

A QA Project Officer is identified for each QAPP. This person is responsible for preparing the draft QAPP and any addenda or amendments, and ensuring that all QA requirements of the QAPP are met. This person normally has responsibility for data collection under the QAPP.

1.8 **Technical Activities or Programs Supported by the Quality System**

All of the technical activities are contained in the QAPPs.

1.9 **QA/QC Roles and Responsibilities of Line Management**

ALPD, GSRAD and WPSCD Program Directors, as line managers, have overall responsibility for the implementation of all QA requirements within their respective programs.

1.10 **Types of Environmental Programs To Which the Quality System Will Be Applied**

Normally, the quality system is applied to the following programs within the ALPD, GSRAD and WPSCD:

- Air Pollution Control Program
- Environmental Services Program
- Geological Survey Program
- Hazardous Waste Program
- Public Drinking Water Program
- Solid Waste Management Program
- Water Pollution Control Program
- Water Resources Program

Occasionally, environmental data may also be collected in support of the Land Reclamation Program within the ALPD or Soil and Water Conservation Program within the WPSCD. Also, on occasion environmental data may be collected in support of the department's Division of State Parks or other agencies such as the State Emergency Management Agency, Missouri Department of Agriculture, U.S. Fish and Wildlife Service, Missouri Department of Conservation and the U.S. Geological Survey. In these cases, the data is collected to support the natural resource and environmental statutory authority of one or more of the programs identified above.

1.11 How Management Will Ensure That Applicable Elements of the Quality System Are Understood

Each program within ALPD, GSRAD and WPSCD will have a copy of or Intranet access to the Quality Management Plan (QMP) and will be familiar with the requirements of the document. All QAPPs will be in conformance with the QMP, and those signing QAPPs will have a copy of and be are familiar with the QMP. In addition, in cooperation with EPA Region VII, periodic training courses and management sessions on quality assurance will be offered for management and technical staff. The department may further develop training that is specific to the department's needs (e.g., non-Superfund work, short refresher courses).

2. QUALITY SYSTEM AND DESCRIPTION

2.1 Quality Management Plan

The Quality Management Plan (QMP) will be prepared and revised by the QA Manager in cooperation with other line managers and the QACs. The QMP documents how the Department of Natural Resources, ALPD, GSRAD and WPSCD plan, implement, and assess the effectiveness of quality assurance and quality control operations applied to environmental programs. This process is part of the divisions' overall Quality System.

The QMP includes data directly generated by the ALPD, GSRAD and WPSCD programs as well as data generated by contractors and subgrantees, and data acquired from outside sources. This includes field and laboratory data gathering activities or investigations that involve the determination of chemical, physical, or biological characteristics related to the environment.

Each of the divisions' programs will have a copy of the approved QMP on file. Implementation of the quality system will be incorporated into the performance planning documents for each program director and part of the directors' performance review to ensure that these expectations are met. Implementation of the quality system will also be included in the performance planning documents for the QACs and the QA project Officers.

The QMP will be reviewed annually to ensure that all information in the QMP is relevant. Any revisions will be forwarded to EPA for its consideration. Within five years from the date of approval of this QMP, the QMP will go through a complete review process and be submitted to EPA for approval.

The review process for any QMPs which must be prepared by an external party (contractors, subgrantees, etc.) conducting environmental data collection will be the same as the review process for Quality Assurance Project Plans described in Section 2.4.1(b).

2.2 Management Systems Reviews

2.2.1 Maintenance of Records

Maintenance of records will primarily be the responsibility of individual project managers. Each QAC should be aware of the requirements for maintenance of records and ensure that individual project officers are sufficiently maintaining the records necessary for every QAPP. Information to maintain include but are not limited to:

- Status of QA Project Plans;
- Data Quality Indicators
  - Precision
  - Accuracy
  - Representativeness
  - Comparability
  - Completeness
- Significant QA problems, corrective actions, corrective action progress plans and recommendations;

The QAC's and QAPP Coordinator will assist the QA Manager in developing and maintaining this information, which will be maintained on file in the ALPD. The development and maintenance of state QA programs will also be included in the annual discussions between the ALPD, GSRAD and WPSCD management and the EPA during the Performance Partnership Agreement process.

2.2.2 Quality System Review and Audit

Several activities are necessary to ensure the department's quality system is effective and is achieving the goals outlined in this QMP. These are Management Systems Reviews (MSR), Technical System Reviews (TSR), performance evaluations, internal and external audits, self-assessments, peer reviews and the QAPP review and approval process. These are outlined below:

(a) Review of the Quality System and QA Project Plans:
Part of each QAC's responsibility for implementation of the department's Quality System is to conduct self-assessment, MRS, and TRS in their respective programs and report findings to the QA Manager. This function may be limited by staff training and capacity, and may as an alternative rely on EPA oversight through audits. The QA manager will make recommendations to correct or modify any problems identified. It is the responsibility of each QA Project Officer or Project Manager to ensure thorough review of all internal and external project plans, sampling and analysis plans, experimental designs associated with environmental data collection activities. These assessments and reviews will help ensure that acceptable QA/QC

activities and requirements are included, that DQO were established prior to the project's inception and that the project will be able to produce data of the type, quantity and quality in a documented and cost-effective manner.

(b) External Reviews and Performance Audits:
Effective implementation of the department's Quality System requires periodic external MRS and performance audits to assess its effectiveness. The results of these reviews and audit will be used to revise the QMP as appropriate. Therefore, all programs will allow their internal and external environmental data collection activities to be subject to external reviews and/or audits of performance.

2.3 Data Quality Objectives

As discussed in Sections 1.2.2(b) and (c), the intended use of the data will be defined before the data collection effort begins. The data quality objective (DQO) process may be used for any new data collection efforts initiated. In large part, the extent of the DQO process used is determined by the quality of data needed. However, the ALPD, GSRAD and WPSCD use the basic elements of the DQO process for all data collection efforts. The graded approach is used in determining the level of quality assurance required.

2.4 Quality Assurance Project Plans

The Quality Assurance Project Plan (QAPP) is a formal document describing how quality assurance and quality control are applied to an environmental data operation to assure that the results obtained are of the type, quantity and quality needed and expected.

As stated in Section 1.2.2(e), any environmental data collection effort will require a QAPP. The QAPP will be prepared following the current versions of *EPA Requirements for Quality Assurance Project Plans* (EPA QA/R-5) and *Guidance on Quality Assurance Project Plans* (EPA QA/G-5).

2.4.1 QAPP Review, Approval and Dissemination Process

(a) QAPPs for Data Collection by the ALPD, GSRAD and WPSCD Programs
The ALPD, GSRAD or WPSCD program that indicates the need to collect environmental data is responsible for the initial development of the QAPP utilizing EPA QA/R-5. Normally, the program Project Manager(s) has this responsibility. The QA Manager, the QAPP Coordinator, the laboratory and field personnel within the Environmental Services Program and the QAC provide assistance to the Project Manager in preparing the QAPP. If the DQO process is used, staff in the Environmental Services Program are available to participate in the process.

The draft QAPP is normally reviewed internally within the respective

environmental program. The draft QAPP is then reviewed by the QAPP Coordinator, the QA Manager and staff in the Environmental Services Program.

Once the QAPP has been finalized, the approval and signature process occurs in the following order: the Project Manager who will have overall responsibility for the data collection; the director of the respective ALPD, GSRAD or WPSCD program that will use the environmental data; the director of the Environmental Services Program who will collect the data and/or provide any chemical analyses associated with the project; and finally by the QA Manager. Copies of each final QAPP will be available in paper or electronically to each signatory as well as to each staff member involved in collection or management of the projects environmental data.

(b) QAPPs Where the Data Collection Occurs Externally

When the environmental data is to be collected externally (e.g. contractors, subgrantees, etc.), a similar review and approval process is used. However, personnel from the external party would serve as the QA Project Officer. The ALPD, GSRAD or WPSCD program that will use the environmental data will have the initial responsibility to ensure that the QAPP is prepared utilizing the *EPA Requirements for Quality Assurance Project Plans* (EPA QA/R-5) and utilizing the guidance of *EPA Guidance for Quality Assurance Project Plans* (EPA QA/G-5). The QA Manager and the laboratory and field personnel of the Environmental Services Program and the program QAC will be available to provide assistance in reviewing the draft QAPP. The ALPD, GSRAD or WPSCD program will also require the external party to utilize an accredited laboratory or submit adequate documentation to the QA Project Officer to support subsequent data quality assessments. The Project Manager and program director and QA Manager will sign the external QAPPs.

Once the QAPP has been finalized, the approval and signature process occurs in the following order: the QA Project Officer from the external party who will be responsible for the data collection; the department's project manager; the director of the respective ALPD, GSRAD or WPSCD environmental program that will use the environmental data; and finally by the QA Manager. Copies of each final QAPP will be available in paper or electronically to each signatory as well as to each staff member involved in collection or management of the projects environmental data.

2.4.2 Certification and Approval of Quality Assurance Project Plans

With the approval of this QMP, the EPA is also approving the ALPD, GSRAD and WPSCD to certify all QAPPs both intramural and extramural with the exception of QAPPs developed in support of a Superfund Cooperative Agreement. When the environmental data is to be collected in support of s Superfund Cooperative Agreement, the QAPP will be developed

and submitted to the EPA for approval in accordance with 40 CFR Part 35, Subpart O.

ALPD, GSRAD and WPSCD will develop and implement a "quality assurance program" as required by 40 CFR Part 58. The requirements of 40 CFR Part 58, Appendix A are used in the development of the ALPD *Quality Control Manual for Ambient Air Monitoring*. This document conforms with the requirements of the above cited federal regulation.

Copies of the QAPPs for federally funded activities will be available for inspection as part of EPA's on-site program evaluation activities or upon request.

2.5 Site Sampling Plans

As part of the DQO and QAPP process, site sampling plans may be prepared for specific non-routine environmental data collection efforts. This would normally include RCRA and Superfund sampling. The site sampling plan defines the specific locations of samples to be collected and the specific analyses to be performed on those samples.

The site sampling plan is normally prepared by the field staff in the ESP or a staff member in the ALPD, GSRAD or WPSCD program requesting the sampling. If the site sampling plan is prepared by the field staff in the ESP, the QA Project Officer from the ALPD, GSRAD or WPSCD program reviews and approves the plan. If the site sampling plan is prepared by a staff member in an ALPD, GSRAD or WPSCD program, a field staff member in the ESP reviews and comments on the plan. The QA Project Officer then has final approval.

2.6 Standard Operating Procedures

Standard Operating Procedures (SOPs) document routine or repetitive administrative and technical activities to facilitate consistency in the quality and integrity of the product. SOPs contain the main elements from the EPA *Guidance for the Preparation of Standard Operating Procedures* (EPA QA/G-6) and may deviate from this guidance while describing the essential elements of the state's procedures. The format for the Environmental Services Program Field Services and Water Quality Monitoring Sections' SOPs follows that contained in appendix E. SOPs are developed and implemented for all routine QC requirements for all monitoring programs, repetitive tests and measurements, and for inspection and maintenance of facilities, equipment, and services. The appropriate SOPs are either included or referenced in each QAPP. The Director of the Environmental Services Program is responsible for maintaining the complete and up-to-date set of field and laboratory SOPs.

Technical SOPs are prepared by the appropriate technical staff member. The SOP undergoes a peer review. Following the peer review the SOP is reviewed by mid-level supervisors and then reviewed and approved by a senior technical supervisor.

Administrative SOPs are reviewed and approved by the relevant Program Director.

2.7 **Data Quality Assessments**

The quality of all data must be assessed after it is generated and before it is used in order to ensure that it is satisfying the intended data user's needs and QA requirements. This assessment should focus on five basic data quality indicators:

(a) Accuracy - Can the data's accuracy be determined, how was it determined, and is it acceptable for the planned use?

(b) Precision - Can the data's precision be determined, how was it determined, and is it acceptable for the planned use?

(c) Completeness - Is a sufficient amount of data available for the planned use?

(d) Representativeness - Generally, how well does the data represent actual conditions at the sampling location, considering the original study design, sampling methods, analytical methods, etc., which were used?

(e) Comparability - Generally, how comparable is the group of data with respect to several factors, including:
- consistency of reporting units;
- standardized siting, sampling, and methods of analysis; and,
- standardized data format relative to applicable criteria and standards.

All of these factors will initially be considered when designing a study, and will be addressed in all QAPPs. Where applicable the EPA *Guidance for Data Quality Assessment* (EPA QA/G-9) can be used in evaluating the data to determine if the data is of the right type, quality, and quantity to support the intended use.

3. PERSONNEL QUALIFICATIONS AND TRAINING

It is the policy of the ALPD, GSRAD and WPSCD that all personnel performing tasks and functions related to data collection will possess adequate education, training, and experience to satisfactorily perform all technical tasks assigned. These education and training requirements will be incorporated into the Position Description Forms for each individual position. These documents define the level of expertise necessary for the particular staff position. ALPD, GSRAD and WPSCD programs will develop and maintain annual training plans for staff members who are responsible for data collection. The training plans will define the training courses necessary for each staff member to attain or maintain the expertise needed to perform certain tasks associated with the position (e.g. training for field staff involved in sample collection, chemists who conduct the analyses, etc.).

To the extent practicable, recognizing limitations on training availability, budget constraints and staff turnover, all personnel involved in quality assurance work should receive

appropriate training for their specific roles.

- All personnel involved in quality assurance, quality control, or primary or secondary data use should successfully complete the EPA course *Orientation to Quality Assurance Management* or its equivalent.
- In addition to the above training, all personnel serving to review and approve quality assurance documents or serving as primary data users should successfully complete the EPA courses *Introduction to Data Quality Objectives*, *Quality Assurance Project Plans*, and *Data Quality Assessment* or their equivalents.
- In addition to the courses above, all personnel serving as Quality Assurance Coordinators should successfully complete the EPA courses *Management System Review Workshop* and *Data Quality Assessment*. QA Coordinators who approve externals QAPPS should successfully complete the EPA course *Introduction to EPA Quality System Requirements.*
- In addition to the courses above, the Quality Assurance Manager, and the QAPP Coordinator should successfully complete the EPA course *Introduction to EPA Quality System Requirements*.

The planning and accomplishment of this training will be included in performance planning and appraisal documents or training logs maintained by the ALPD, GSRAD and WPSCD programs. Adequate training for department staff will be a high priority. The department's quality staff may assist in providing training for department staff, recognizing that EPA may remain the primary source of training and that EPA provides appropriate models for quality training.

The department has been an active participant in EPA's quality assurance and quality control training programs offered through Region VII. The department has encouraged both its line staff and managers to attend the training program. The EPA Regional Quality Assurance Manager will advise the QA Manager of available quality assurance training opportunities for the divisions' staff. The effectiveness of quality assurance training received by staff will be evaluated through field evaluations and other means.

4. PROCUREMENT OF ITEMS AND SERVICES

4.1 Procurement

The Missouri Office of Administration, Division of Purchasing and Materials Management is responsible for procurement. This agency maintains state purchasing regulations, specifications and procedures (Title 1 Code of State Regulations, Division 40, Chapter 1) which ensure the quality of contracted activities. Technical staff requesting the service provide input and are normally part of the bid evaluation team to ensure that the contract awarded meets the quality needed. The Office of Administration is responsible for ensuring that the contractor meets the terms and conditions of the contract. If the contract involves the collection or analysis of environmental data, all appropriate quality assurance requirements will be met.

The Environmental Services Program (ESP), Chemical Analysis Section has an SOP which applies to the procurement, receipt, and acceptance of supplies used for all

procedures performed in the laboratories. Also, the ESP has procurement procedures which include review and approval by supervisory staff of all purchases for field equipment and supplies.

4.2 **Contracts, Subgrants, and Agreements**

Any contracts for services, subgrants or agreements entered into by ALPD, GSRAD or WPSCD which involve the collection of environmental data will ensure that all appropriate quality assurance requirements are met. Any required QAPPs will be developed using the graded approach as appropriate for the use of the data. Program QACs will review and approve all external QAPPs and provide copies (electronic and paper) to the QA Manager. External QAPPs will be approved in this manner due to the volume of external QAPPs and the necessary timeliness of their review, approval and implementation. The QAPP Coordinator and QA Manager will be available to assist the QACs in this function. The QA Manager will decide any issues that cannot be resolved between an external party and the QAC.

4.3 **Acquired Data**

The varied responsibilities of ALPD, GSRAD and WPSCD necessitate the use of data acquired by the department that was independently managed, collected, and analyzed. To the extent possible, the department will involve itself in these activities so that these external sources produce quality data. It is the goal of the department that all environmental data used by the department, including acquired data, is scientifically defensible. The department may use the following or additional ways of assuring that data it uses from acquired sources meets appropriate criteria for those uses:

(a) External QAPPs may be developed for routinely generated and reported data.

(b) Training and evaluation protocols may be established for those collecting and reporting data.

(c) Acquired data may be classified for specific uses according to its age, quantity, accuracy, precision, completeness, representativeness or comparability.

5. DOCUMENTATION AND RECORDS

Adequate precautions will be taken during the reduction, manipulation, and storage of data in order to prevent the introduction of errors or the loss or misinterpretation of data. A Laboratory Information Management System (LIMS) maintains all information and data on all environmental samples received. The system is utilized to log in samples collected, record results of analyses, and generate sample analyses and management reports. The LIMS is backed up daily, weekly, and monthly. The monthly backups are sent offsite for long-term storage. All other backup tapes are stored in a data quality fire proof safe. System maintenance, including checking for operating system errors, LIMS system errors, and

database integrity, is performed weekly. This includes checking for operating system errors, LIMS system errors, and database integrity.

The QA Manager identifies all QA and QC documents listed in the ALPD, GSRAD and WPSCD Agency Records Disposition Schedule. The ALPD, GSRAD and WPSCD will follow the current Agency Records Disposition Schedule approved by the Secretary of State's Office for all QA and QC documents and records of environmental data.

6. COMPUTER HARDWARE AND SOFTWARE

This section describes how ALPD, GSRAD and WPSCD manage the computer hardware and software used to support environmental programs and operations. It also describes the roles and responsibilities assigned to management and staff.

- How hardware is evaluated to ensure that it is appropriate for the intended application
  Hardware purchases are made through a formal review process called the Data Processing Services Request System (DPSR). This process starts with the requester's local Information Resource Manager (IRM). The IRM staff are data processing professionals who develop the annual computer hardware purchasing plans for the programs in the division. Additional levels of review are provided as needed by the division's data processing manager and the department's director of Management Information Services.

- How hardware changes are controlled to reduce performance impact
  The department's executive staff approved a policy entitled *Minimum Computer Configurations*. This policy specifies the hardware and software for desktop and laptop computers. The recommended configurations are periodically reviewed by the department's Data Processing Coordinators to determine if the department should upgrade the minimum configuration. The DPSR review process also helps to ensure that purchases meet or exceed this policy. Exceptions are allowed if an application needs the additional processing power.

- How software developed by the division is evaluated to meet user requirements
  The ability of software developed in-house to meet user needs is based on two sources of input. First users are asked to help develop the original specifications for their application. Secondly, users submit requests for additional features or problem corrections that are tracked in databases assigned to each major application. Users are also asked to help determine the order in which new features are added and problems should be prioritized for resolution.

- How purchased software is evaluated to meet department standards
  The department's executive staff approved a policy entitled *Software Standards*. This policy describes how the department's standard software is evaluated and selected. The Management Information Services Program is responsible for maintaining a current list

of standard software. This software standard is periodically reviewed by the department's Data Processing Coordinators to determine if it is in the interest of the department to continue to use and support a particular software or to add software to the list.

- How are data quality and accuracy standards met

  The computer applications that process data, include data entry edit routines and batch edits to ensure that the data in the systems meet defined data quality and accuracy standards.

7. PLANNING

The primary planning documents utilized by the ALPD, GSRAD and WPSCD are: the budget documents; the department's Integrated Strategic Plan; the annual planning process documents prepared by the ALPD, GSRAD and WPSCD programs and regional offices; the Performance Partnership Agreement and Performance Partnership Grant workplans with EPA, Region VII; the workplans associated with other federal grants and cooperative agreements; the annual workplans between the ALPD, GSRAD and WPSCD programs and the regional offices; and the QAPPs which are also used as a planning document to project the environmental data operations for the fiscal year. Generic QAPPs may be used where similar projects occur over the course of multiple years. Addendums to these QAPPs will reflect changes in the QAPPs over time and appendices will reflect changes in workplans.

As discussed in Sections 1.2.2(b) and (c) and Section 2.3, when an environmental data need has been identified, appropriate technical staff begin the planning process and development of a QAPP. The DQO process may be used as a tool to plan the process. ALPD, GSRAD and WPSCD also have ongoing environmental data operations where the data needs are relatively constant from year-to-year. The QAPPs for these data operations are reviewed and updated on an annual basis (or once every three years in the case of a QAPP in a generic status) to meet the needs of the user of the environmental data. The process for review and approval of the QAPP is discussed in Section 2.4.

8. IMPLEMENTATION OF WORK PROCESSES

Ultimately, the Directors of the ALPD, GSRAD and WPSCD are responsible for ensuring that the work is performed in accordance with appropriate planning documents. The QMP provides the framework for defining the procedures to ensure that environmental data operations are implemented in accordance with an approved QAPP. The QAPP describes in detail the necessary quality assurance, quality control, and other technical activities that must be implemented to ensure that the results of the work performed will meet the stated performance criteria. The QMP will undergo a complete review and be revised as appropriate every five years as discussed in Section 2.1. Annual changes may occur if needed to reflect changes in ALPD, GSRAD or WPSCD policies or procedures.

9. ASSESSMENT AND RESPONSE

9.1 Review of the Quality Management Plan

As discussed in Sections 2 and 8, the QMP will be reviewed annually and changes made if necessary. The QA Manager will be responsible for coordinating this effort and ensuring that any needed changes are made. The QMP will undergo a review and be revised as appropriate, including signatures, every five years.

9.2 Assessments/Evaluations

Several types of assessment tools are employed by ALPD, GSRAD and WPSCD to ensure the effectiveness of the quality system

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1. Management Independent Assessments
   EPA Region VII conducts annual evaluations and the Inspector General's Office conducts periodic evaluations of the state's environmental programs. These evaluations normally include some type of review of the program's quality management structure. Comments and recommendations from these evaluations are used by the environmental program and division management to take any corrective actions which may be needed. The QA Manager will respond to EPA regarding the actions that are taken.

2. Technical Self-Assessment
   The Field QA Manager in the Environmental Services Program conducts audits of environmental sampling activities according to "Field Quality Assurance Audit Procedures." The Field QA Manager has the authority to issue a stop work order upon finding a significant condition that would adversely affect the quality and usability of the data. The Field QA Manager has the responsibility to initiate and implement response actions associated with findings identified during the field audit. The procedures require that any response actions be properly addressed by the field personnel.

   Assessment and response action for analytical data quality are outlined in the SOP "Quality Control Charts" and will be conducted by the supervisor of the analytical laboratory in the Environmental Services Program.

3. Technical Independent Assessment
   The analytical laboratory participates in the semi-annual EPA Performance Audit Sample Program - WP and WS Series. Data resulting from the participation in this program are reviewed for accuracy and any problems are addressed.

   EPA Region VII conducts periodic Laboratory On-Site Evaluations to assess the laboratory procedures in order to maintain certification under the requirements of the Safe Drinking Water Act and for other state operated, federally-funded programs.

   EPA Region VII, at the request of ALPD, GSRAD or WPSCD, conducts QA/QC oversight of field inspection activities which include sample collection. Reports of the evaluations are prepared and sent to the appropriate ALPD, GSRAD or WPSCD program for review. Corrective actions are taken as appropriate on any deficiencies reported.

4. Internal Assessment
   Internal assessments are conducted in several ways:
   a. Status Reports;
   b. Program evaluations;
   c. Quarterly meetings with the programs; and
   d. Quarterly performance planning meetings.

10. QUALITY IMPROVEMENT

The QA Manager has the overall responsibility for identifying, planning, implementing, and evaluating the effectiveness of quality improvement activities and ensuring that corrective actions are taken to address quality assurance issues related to environmental data operations. The project officers identified for each QAPP, field personnel, and laboratory personnel are responsible for identifying and recommending appropriate actions to correct any quality assurance deficiencies. Periodic coordination meetings are held to address issues related to specific QAPPs and to recommend any necessary corrective actions.

EPA, Region VII, in the performance of their responsibilities to conduct annual evaluations of the state's environmental programs and laboratory on-site evaluations, also identifies any quality assurance deficiencies. Corrective actions can then be taken to maintain and improve the effectiveness of the quality system.

APPENDIX A

Divisions Organization Charts

APPENDIX B

Map of the Regional Offices

APPENDIX C

List of Current Quality Assurance Project Plans for Environmental Data Operations

Air Pollution Control Program Quality Assurance Project Plans

Department of Natural Resources
Quality Assurance Project Plan for Air Toxics/FTIR
Quality Assurance Project Plan for IMPROVE Protocol
Quality Assurance Project Plan for $PM_{2.5}$ Speciation

External Agencies
Quality Assurance Project Plan for SLAMS/NAMS/SPMS/$PM_{2.5}$ Ambient Air Quality Monitoring
Quality Assurance Project Plan for SLAMS/NAMS/SPMS Ambient Air Quality Monitoring (Kansas City)
Quality Assurance Project Plan for $PM_{2.5}$, PM_{10}, Lead Ambient Air Quality Monitoring (St. Louis County)
Quality Assurance Project Plan for SLAMS/NAMS/SPMS Ambient Air Quality Monitoring (St. Louis County)

Hazardous Waste Program Quality Assurance Project Plans

Department of Natural Resources
Quality Assurance Project Plan for Federal Facilities Defense Sites
Quality Assurance Project Plan for Formerly Utilized Sites Remedial Action Program (FUSRAP)
Quality Assurance Project Plan for Weldon spring Site Remedial Action Project (WSSRAP)
Quality Assurance Project Plan for Kansas City Plant Agreement in Principal
Quality Assurance Project Plan for TSCA-PCB Facility Inspection
Quality Assurance Project Plan for Leaking Petroleum Storage Tanks (LPST)
Quality Assurance Project Plan for RCRA Enforcement Activities
Quality Assurance Project Plan for TSD Corrective Action, Closure, Remediation and Groundwater Monitoring

Public Drinking Water Program Quality Assurance Project Plans

Department of Natural Resources
Quality Assurance Project Plan for Public Drinking Water Systems Monitoring

Solid Waste Management Program Quality Assurance Project Plans

Department of Natural Resources

Quality Assurance Project Plan for Water Sampling and Methane Gas Monitoring at Solid Waste Disposal Facilities
Quality Assurance Project Plan for Water Sampling at Valley Sanitation Service, Inc. Landfill, 319 Grant

Water Pollution Control Program Quality Assurance Project Plans

Department of Natural Resources
Quality Assurance Project Plan for Biological Assessment
Quality Assurance Project Plan for Complaint Sampling
Quality Assurance Project Plan for Wastewater Sampling at Wastewater Treatment Facilities
Quality Assurance Project Plan for Fish Tissue Monitoring
Quality Assurance Project Plan for Herbicide Monitoring of Public Drinking Reservoirs
Quality Assurance Project Plan for Inspection Sampling at Wastewater Treatment Facilities, Concentrated Animal Feeding Operations, MODOT Land Disturbance Sites, Site Specific Stormwater Discharges and Operating Mine Sites
Quality Assurance Project Plan for Low Flow Surveys
Quality Assurance Project Plan for Validation of Aquatic Macroivertebrate Community Endpoints for Assessment of Biological Condition in the Lower Missouri River
Quality Assurance Project Plan for Sediment Monitoring Network
Quality Assurance Project Plan for Wadeable Streams Network
Quality Assurance Project Plan for Wasteload Allocations
Quality Assurance Project Plan for Volunteer Water Quality Monitoring

External Agencies
Quality Assurance Project Plan for James River Basin Watershed 319 Water Quality Restoration Project
Quality Assurance Project Plan for Upper Reach Spring River 319 Water Quality Project – Restoration Monitoring

Water Resources Program Quality Assurance Project Plan

Department of Natural Resources
Assessing Urban Wetlands
Monitoring Pesticides in Missouri's Groundwater

External Agencies
Lake bathymetry global positioning and sounding procedures for lake volume determinations

APPENDIX D

Glossary of Quality Assurance Terms and Acronyms

Terms

Assessment – the evaluation process used to measure the performance or effectiveness of a system and its elements. As used here, assessment is an all-inclusive term to denote any of the following: audit, performance evaluation, management system review, peer review, inspection, or surveillance.

Audit – a systematic and independent examination to determine whether quality activities and related results comply with planned arrangements and whether these arrangements are implemented effectively and are suitable to achieve objectives.

Data quality assessment – a statistical and scientific evaluation of the data set to determine the validity and performance of the data collection design and statistical test, and to determine the adequacy of the data set for its intended use.

Environmental data operations – work performed to obtain, use, or report information pertaining to environmental processes and conditions.

Inspection – examination or measurement of an item or activity to verify conformance to specific requirements.

Management – those individuals directly responsible and accountable for planning, implementing, and assessing work.

Management system – a structured, non-technical system describing the policies, objectives, principles, organizational authority, responsibility, accountability, and implementation plan of an organization for conducting work and producing items and services.

Management system review – the qualitative assessment of a data collection operation and/or organization(s) to establish whether the prevailing quality management structure, policies, practices, and procedures are adequate for ensuring that the type and quality of data needed are obtained.

Peer review – a documented critical review of work by qualified individuals (or organizations) who are independent of those who performed the work, but are collectively equivalent in technical expertise. A peer review is conducted to ensure that activities are technically adequate, competently performed, properly documented, and satisfy established technical and quality requirements. The peer review is an in-depth assessment of the assumptions, calculations, extrapolations, alternate interpretations, methodology, acceptance criteria, and conclusions pertaining to specific work and of the documentation that supports them.

Performance audit (measure) – a type of audit in which the quantitative data generated in a

measurement system are obtained independently and compared with routinely obtained data to evaluate the proficiency of an analyst or laboratory.

Process – a set of interrelated resources and activities which transforms inputs into outputs. Examples of processes included analysis, design, data collection, operation, fabrication, and calculation.

Quality - the totality of features and characteristics of a product or service that bear n its ability to meet stated or implied needs and expectations of the user.

Quality assurance (QA) – an integrated system of management activities involving planning, implementation, documentation, assessment, reporting, and quality improvement to ensure that a process item, or service is of the type and quality needed and expected by the client.

Quality assurance project plan (QAPP) – a formal document describing in comprehensive detail the necessary QA, QC, and other technical activities that must be implemented to ensure that the results o e work performed will satisfy the stated performance criteria.

Quality control (QC) – the overall system of technical activities that measures the attributes and performance of a process, item, or service against defined standards to verify that they meet the state requirements established by the customer; operational techniques and activities that are used to fulfill requirements for quality.

Quality improvement – a management program for improving the quality of operations. Such management programs generally entail a formal mechanism for encouraging worker recommendations with timely management evaluation and feedback or implementation.

Quality management plan – a document that describes the quality system in terms of the organizational structure, functional responsibilities of management staff, lines of authority, and required interfaces for those planning, implementing, and assessing all activities conducted.

Quality system – a structured and documented management system describing the policies, objectives, principles, organizational authority, responsibilities, accountability, and implementation plan of an organization for ensuring quality in its work processes, products (items), and services. The quality system provides the framework for planning, implementing, documenting, and assessing work performed by the organization and for carrying out required QA and QC activities.

Record – a completed document that provides objective evidence of an item or process. Records may include photographs, drawings, magnetic tape, or other data recording media.

Scientifically defensible data – information of known and documented quality that is qualified to be used for specified purposes.

Self-assessment – assessments of work conducted by individuals, groups, or organizations directly responsible for overseeing and/or performing the work.

Standard operating procedure (SOP) – a written document that details the method for an operation, analysis, or action with thoroughly prescribed techniques and steps, and that is officially approved as the method for performing certain routine or repetitive tasks.

Acronyms

ALPD	Air and Land Protection Division
APCP	Air Pollution Control Program
CAS	Chemical Analysis Section
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
DPSR	Data Processing Services Request System
DQO	Data quality objectives
DSP	Division of State Parks
EPA	Environmental Protection Agency
ESP	Environmental Services Program
FSS	Field Services Section
GSRAD	Geological Survey and Resource Assessment Division
GSP	Geological Survey Program
HWP	Hazardous Waste Program
IRM	Information Resource Manager
KCRO	Kansas City Regional Office
LIMS	Laboratory Information Management System
LRP	Land Reclamation Program
MDNR	Missouri Department of Natural Resources
MIS	Management Information Services
MSR	Management Systems Reviews
NERO	Northeast Regional Office
PDF	Position Description Form
PDWP	Public Drinking Water Program
QA	Quality Assurance
QA/QC	Quality Assurance/Quality Control
QAC	QA Coordinator
QAPP	Quality Assurance Project Plan
QC	Quality Control
QMP	Quality Management Plan
RCRA	Resource Conservation and Recovery Act
SERO	Southeast Regional Office
SOP	Standard Operating Procedure
SWCP	Soil and Water Conservation Program
SWMP	Solid Waste Management Program
SWRO	Southwest Regional Office

TSCA	Toxic Substance Control Act
TSR	Technical System Reviews
WPCP	Water Pollution Control Program
WPSCD	Water Protection and Soil Conservation Division
WRP	Water Resources Program

APPENDIX E

Requirements for Field Services and Water Quality Monitoring Standard Operating Procedures

MISSOURI DEPARTMENT OF NATURAL RESOURCES
AIR AND LAND PROTECTION DIVISION
ENVIRONMENTAL SERVICES PROGRAM
Standard Operating Procedures

SOP #: MDNR-FSS-400 EFFECTIVE DATE: August 9, 2000

SOP TITLE: Developing, Revising and Reviewing FSS and WQMS Standard Operating Procedures

WRITTEN BY: Eric Sappington, Environmental Specialist IV, Field Services Section, ESP

APPROVED BY: Earl Pabst, Director, ESP

SUMMARY OF REVISIONS: Minor changes have been made throughout this SOP to reflect organizational changes within the program.

APPLICABILITY: The procedures described in this SOP are applicable to all ESP personnel involved with writing, reviewing, and revising SOPs for the Field Services and Water Quality Monitoring Sections.

DISTRIBUTION: MoDNR Intranet
ESP SOP Coordinator

RECERTIFICATION RECORD:

Date Reviewed				
Initials				

1.0 PURPOSE

A Standard Operating Procedure (SOP) describes how to conduct specific technical and administrative activities. The development and use of SOPs promotes quality and consistency within the organization in conducting those activities. They are intended to be specific to the organization whose activities are described, should be read and used by existing employees when conducting work activities, and should be an integral part of a new employee training program. This particular SOP has been written to provide guidance for Environmental Services Program (ESP) Field Services Section (FSS) and Water Quality Monitoring Section staff in development of new and revision of existing SOPs.

The FSS and WQMS have developed two basic types of SOP documents: the technical SOP (hereinafter referred to as simply an SOP), and the Project Procedure. An SOP is narrow in scope and usually describes in a step-by-step manner how to perform a certain field or laboratory activity. A Project Procedure is broader in scope and describes in more general terms how to conduct a field activity or type of investigation. The procedures described within this SOP are applicable to the development, revision, and review of both types of documents.

It shall be the goal of the program to review existing FSS and WQMS SOPs for recertification once every two years. The SOP Coordinator shall review the current list of SOPs on a regular basis and attempt to ensure that the recertification goal is met. The SOP Coordinator shall consult with the appropriate FSS or WQMS Chief to determine responsibility for rewriting individual SOPs that are due for recertification. The appropriate Section Chief shall make all assignments regarding who shall be responsible for writing new SOPs.

2.0 FORMAT AND STYLE

2.1 In writing an SOP, the terms "shall" and "must" are to be used when the specific element is required and deviation from the specification will constitute nonconformance with the standard. The term "should" indicates that the procedure is recommended but not absolutely required. The term "may" indicates when the procedure is optional.

2.2 With few exceptions, all typewritten words shall be in 12 pt. Times New Roman. The standard title page, described in more detail later, shall have a main centered heading in 14 pt. Times New Roman. The control documentation on each page, described in more detail later, shall be in 10 pt. Times New Roman. Exceptions will be made where meeting these guidelines is difficult or deemed inappropriate, such as on illustrations, tables, etc.

2.3 Bold type or underlining shall not be used for headings, except for the standard title page where the main centered heading shall be in bold type. However, bold type or underlining may be used by an author to emphasize a point within an SOP.

2.4 The following outline format and numbering system shall be used:

1.0 MAIN HEADING (All Caps)

1.1 Secondary Heading or paragraph

1.1.1 Subheading or paragraph

Arabic numerals shall be used within the outline and numbering system. The numbering system should not extend beyond the level of subheading (i.e. 1.1.1). If there is a 1.1, then there must be at least a 1.2. If there is a 1.1.1, then there must be at least a 1.1.2.

At the author's discretion, unnumbered paragraphs may be used beneath Main Headings, Secondary Headings or Subheadings if the information does not need to be presented in any particular step-by-step manner or chronological order. Section 1.0 of this particular SOP is an example of appropriate use of unnumbered paragraphs below a Main Heading.

2.5 If there are elements that would not fit well into a numbering system, such as a list of acronyms or an equipment list, then bullets may be used. Bullets should be used instead of dashes "-". For example:

The following equipment and supplies will be needed:

- sample tags
- cubitainers
- cooler

2.6 Control documentation must be included on each page of an SOP and, with the exception of the title page, shall be located as a header in the upper left-hand corner of the page. The title page shall include only "Page X of Y", which shall be centered at the bottom of the page. Control documentation shall also be placed in the upper left-hand corner of the table of contents and all pages of appendices and attachments, although there may be exceptions made when it is deemed inappropriate or too burdensome to accomplish. Control documentation shall be in 10 pt. Times New Roman, as follows:

MDNR-FSS-XXX (SOP #)
Effective Date: XXXXXX
Page X of Y (page number of total number of pages)

2.7 Each page should have a standard one-inch margin on the left, right, and bottom of the page. The header should be 1/2-inch from the top of the page.

2.8 Photographs can be valuable illustrative tools to help make a point or further describe an item that is discussed within an SOP. There are several ways to insert a

photo within a document and authors may use whatever means they are comfortable with (e.g., Power Point). When photos are inserted in an SOP they should be clear and of good quality. If labeling is used on a photograph, the type, size, and color of the lettering should be selected to provide optimum contrast to make the labeling easy to read.

3.0 CONTENT

3.1 Title Page

A standard title page (such as the one used for this SOP) has been developed and shall be used for all SOPs. An electronic copy of the standard title page can be obtained from the FSS SOP Coordinator.

3.2 Table of Contents

A table of contents should only be included for documents that are more than ten pages long, excluding appendices or attachments.

3.3 Sections

Most SOPs should include the following sections, if applicable. The sections are listed in the recommended order, are capitalized as they should be in an actual SOP, and are followed by a brief discussion on what should be included within the section. A Project Procedure may also follow this recommended format, but because a Project Procedure is broader in scope than an SOP, the sections recommended below may not be applicable.

- SCOPE AND APPLICABILITY
  Should include a brief introduction of the SOP, the purpose, scope, and the audience for which the SOP is written.

- SUMMARY OF METHOD
  Should include a brief narrative summary of the heart of the SOP, and should be no more than one or two paragraphs long.

- DEFINITIONS AND ACRONYMS
  Any acronyms, abbreviations, and technical or unusual words should be described here.

- HEALTH AND SAFETY REQUIREMENTS
  Specific health and safety requirements should be listed in this section, including chemical safety information, personal protective equipment requirements, and

cautionary statements.

- PERSONNEL QUALIFICATIONS
  Should include any specific training, experience, or other qualifications personnel would need to safely and effectively follow the procedure.

- SUPPLIES AND EQUIPMENT
  All supplies and equipment needed to perform the procedure should be listed in this section.

- PROCEDURE
  This section shall specifically explain each step of the process necessary to thoroughly and safely complete the task or activity that is the subject of the SOP. In most cases, the procedure should be organized chronologically so that the reader can follow the procedure in a step-by-step manner starting at the top of the section and working down through the procedure to the end.

- HANDLING AND PRESERVATION
  This section should include any particular sample handling or preservation methods needed.

- QUALITY ASSURANCE/QUALITY CONTROL
  Any QA/QC procedures that are important to the procedure should be included in this section. For example, if trip blanks, field blanks, or duplicate samples are needed, then they should be indicated here.

- REFERENCES
  All other documents referenced or mentioned in the SOP shall be listed in this section, including other SOPs.

4.0 REVIEW PROCESS

4.1 Whenever an author is ready to submit either a new SOP for formal review or an existing SOP for recertification review, the author must first submit a copy to the SOP Coordinator. The review procedures for recertification are the same as that for newly written SOPs.

4.2 The SOP Coordinator shall distribute the submitted SOP to the SOP Review Committee. The SOP Review Committee consists of highly experienced ESP staff, including the ESP Program Director and several Unit and Section Chiefs.

4.3 The members of the SOP Review Committee shall have one month to review the document and submit written comments to the SOP Coordinator. If the author can

demonstrate the need for an expedited review turn-around time, then the SOP Coordinator may request comments from the Review Committee within a shorter time frame.

4.4. The SOP Coordinator shall collect the written comments and provide them to the author.

4.5 The author shall consider the comments and write a second draft of the SOP and submit a copy of the revision to the SOP Coordinator. The author must attach a summary of the written comments received from each member of the SOP Review Committee and provide a written response to each comment. Only substantive comments need to be addressed - typos and other minor comments need not be included in the written summary.

4.6 The SOP Coordinator shall distribute the second draft to the SOP Review Committee for a second review.

4.7 The SOP Review Committee shall provide written comments to the SOP Coordinator within two weeks. The SOP Coordinator will again collect the comments and provide them to the author.

4.8 The author shall consider the second round of comments and write a third draft, if necessary. The third or final draft shall then be submitted to the SOP Coordinator. If there were any substantive comments received, the author must compile a written summary of the comments and include a written response to each comment as an attachment to the final draft.

4.9 The SOP Coordinator shall submit the final copy, with a summary of comments attachment, to the Program Director for signature. Any final comments by the Program Director should be provided to the SOP Coordinator who will work with the author to get the document finalized. The SOP Coordinator shall track all SOPs throughout the review process to ensure that the prescribed timelines are followed.

5.0 DISTRIBUTION AND STORAGE

5.1 In the interest of reducing paper copies and ensuring that all staff have ready access to the most up-to-date versions, the ESP shall make all of its current field SOPs available via the MoDNR Intranet and will no longer be routinely distributing paper copies. The SOP Coordinator shall be responsible for maintaining an electronic copy of all current SOP documents and maintaining the MoDNR Intranet web page on SOPs.

5.2 In terms of usage and availability, there are three categories of SOPs: current, inactive, and outdated.

5.2.1 A current SOP is one that covers a procedure that is routinely followed by ESP field staff. A current SOP should either have an effective date or recertification date that is not more than two years old. Current SOPs are made available on the MoDNR Intranet. The SOP Coordinator shall maintain paper copies with a signature page of all current SOPs.

5.2.2 An inactive SOP describes a procedure that is no longer followed by ESP field staff. An SOP may become inactive due to changes in technology or changes in program responsibility. The FSS or WQMS Chief shall determine when an SOP should be inactivated and removed from the current list. Once inactivated, the SOP shall no longer be available via the MoDNR Intranet. Copies of all inactive SOPs will be kept and maintained by the SOP Coordinator if needed for future reference.

5.2.3 An outdated SOP is one that has been replaced by an updated revision. The updated revision usually goes by the same SOP name and number as the outdated SOP it replaced. Outdated SOPs will not be available via the MoDNR Intranet. The difference between an outdated SOP and an inactive SOP is that the procedure described within an outdated SOP is still performed to some extent by ESP field staff, it has just been revised to reflect changes to the procedure. The procedure found in an inactive SOP is no longer being performed in any sense. Copies of all outdated SOPs will be kept and maintained by the SOP Coordinator if needed for future reference.

APPENDIX F

Reference Documents

EPA Requirements for Quality Management Plans (EPA QA/R-2), March 2001

EPA Requirements for Quality Assurance Project Plans (EPA QA/R-5), March 2001

Guidance for Developing Quality Systems for Environmental Programs (EPA QA/G-1), November 2002

Guidance for the Data Quality Objectives Process (EPA QA/G-4), August 2000

Guidance on Quality Assurance Project Plans (EPA QA/G-5), December 2002

Guidance on Choosing a Sampling Design for Environmental Data Collection (EPA QA/G-5S), December 2002

Guidance on Quality Assurance Project Plans for Models (EPA QA/G-5M), December 2002

Guidance for Preparing Standard Operating Procedures (EPA QA/G-6), March 2001

Guidance on Technical Audits and Related Assessments (EPA QA/G-7), January 2000

Guidance on Environmental Data Verification and Validation (EPA QA/G-8) November 2002

Guidance on Data Quality Assessments: Practical Methods for Data Analysis (EPA QA/G-9), July 2000

Guidance for Developing a Training Program for Quality Systems (EPA QA/G-10), December 2000

Overview of the EPA Quality System for Environmental Data and Technology (EPA/240/R-02/003), November 2002